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Claims

[c1] 1. Method for the reconditioning of a friction pair (3) comprising a lining and a rotor in a service brake (2) of the drum or disc brake type forming part of a brake system of a vehicle, which in addition to the said service brake (2) comprises one or more auxiliary brakes (10) and a control system (11) for distribution of the requested brake power between the said service brake and auxiliary brake or auxiliary brakes, the method comprising the following stages:
- determination (30, 41) of a parameter value (I) for a reconditionable surface characteristic, such as the coefficient of friction, dirt or rust covering of the friction pair, for example
- reconditioning (33, 43, 44) of the friction pair through the supply of a defined braking energy (E), as a function of the said parameter value (I) determined for the said friction pair (3).

[c2] 2. Method for the reconditioning of a friction pair according to Claim 1, wherein the method comprises the following stages:
- determination (32) of the temperature of the friction

pair

- reconditioning (35) of the friction pair through the supply of a defined braking energy, as a function of the said parameter value (I) determined for the said friction pair (3) at a temperature of the friction pair which exceeds a defined regeneration temperature.

[c3] 3. Method for the reconditioning of a friction pair according to Claim 1, wherein said parameter value is a function of the coefficient of friction of the friction pair.

[c4] 4. Method for the reconditioning of a friction pair according to Claim 3, wherein said coefficient of friction is determined by a retardation test, in which linings forming part of the said service brake are applied with defined force against the rotor, following which the retardation of the vehicle is measured and the coefficient of friction is calculated from data on the said force and retardation.

[c5] 5. Method for the reconditioning of a friction pair according to Claim 3, wherein said coefficient of friction is determined by an acceleration test, in which linings forming part of the said service brake are applied with defined force against the rotor, and an engine forming part of the vehicle is made to deliver an additional torque, following which the acceleration of the vehicle is

measured and the coefficient of friction is calculated from data on the said force, acceleration and additional torque.

[c6] 6. Method for the reconditioning of a friction pair according to Claim 5, wherein said additional torque is suited to maintaining the speed of the vehicle.

[c7] 7. Method for the reconditioning of a friction pair according to Claim 1, wherein said parameter value for the reconditionable surface characteristic is a function of the degree of rusting and/or fouling of the friction pair.

[c8] 8. Method for the reconditioning of a friction pair according to Claim 1, wherein said parameter value is estimated from a set of the following parameters: time of year, geographical location, climate zone, atmospheric humidity, outdoor temperature, design of road network, fuel consumption, engine running time, total engine revolutions, distance covered, distance covered since last braking, distance covered since last reconditioning, time since last braking, time since last reconditioning, supply of braking energy, retardation history, application force of the brake system, temperature of the friction pair, bearing temperature and temperature of friction material fitted to brake shoes.

[c9] 9. Method for the reconditioning of a friction pair according to Claim 8, wherein said parameter value is estimated from the said set of parameters through the formation of a function $I_{n+1} = I_n + \Sigma \alpha a_A C_A$, where I_{n+1} is the current value of the parameter value and α_A is a weighted function for a parameter c_A.

[c10] 10. Method for the reconditioning of a friction pair according to Claim 8, wherein said function is divided into a first sub-function $I_{Gn+1} = I_{Gn} + \Sigma \alpha_A c_{GA}$, where I_{Gn+1} is the current value of the glazing parameters and α_A represents a set of coefficients for a number of parameters c_{GA} which influence the glazing of the friction pair, and a second sub-function $I_{Sn+1} = I_{Sn} + \Sigma \beta_A c_{GA}$, where I_{Sn+1} is the current value of the dirt and/or rusting parameters and β_A represents a set of coefficients for a number of parameters c_{SA} which influence the dirt and/or rusting of the friction pair.

[c11] 11. Method for the reconditioning of a friction pair according to Claim 9, wherein the reconditioning part of the said function and/or sub-function are described as $C_{Grek} = E^{\gamma}(T-Tcr)^{\delta}$, when $T>Tcr$, where E is represented by the input brake energy at a temperature T and Tcr is represented by a temperature limit at which reconditioning starts to take effect.

[c12] 12. Method for the reconditioning of a friction pair according to any of Claim 2, wherein the temperature of the friction pair (3) is determined through information on use of the service brake (2) in which a temperature margin, proportional to the energy supplied in each braking is added to a current temperature value, and a continuous temperature reduction is added in as a function of the current temperature value and the time.

[c13] 13. Method for the reconditioning of a friction pair according to any of Claim 2, wherein the temperature of the friction pair (3) is determined by a temperature sensor (14), which detects the temperature of the friction pair (3), or an element which is thermally coupled to the friction pair.

[c14] 14. Method for the reconditioning of a friction pair according to any of Claim 1, wherein said defined braking energy corresponds to an amount of energy that returns the parameter value for the reconditionable surface characteristic of the friction pair to a defined limit.

[c15] 15. Method for the reconditioning of a friction pair according to Claim 1, wherein said reconditioning is commenced when the parameter value of the said reconditionable surface characteristic is less than a defined limit.

[c16] 16. Method for the reconditioning of a friction pair according to Claim 15, wherein said defined braking energy is a function of the difference between the said limit and the said parameter value for the surface characteristic.

[c17] 17. Method for the reconditioning of a friction pair according to any of Claim 1, wherein said supply of a defined braking energy is achieved in that the said control system (11) for the distribution of a requested brake power between the said service brake (2) and auxiliary brake (10) prioritizes brake power supplied via said service brake (2) in relation to brake power supplied via said auxiliary brake (10), thereby ensuring sufficient energy for regeneration.

[c18] 18. Method for the reconditioning of a friction pair according to Claim 1, in which the vehicle comprises a plurality of wheel axles each carrying service brakes (2), wherein said supply of a defined braking energy is achieved in that the brake power distribution control system (11) distributes the brake energy supplied differently between the said plurality of axles.

[c19] 19. Method for the reconditioning of a friction pair according to Claim 1, wherein supply of the said defined

braking energy is performed within a temperature interval at a temperature of the friction pair which exceeds a regeneration temperature limit and is less than a temperature limit T_G at which a solid wear-resistant covering forms on the friction pair.

[c20] 20. Method for the reconditioning of a friction pair according to Claim 1, in which the vehicle comprises a plurality of wheel axles each carrying service brakes,
wherein the control system for the distribution of a requested brake power between the said service brake and secondary brake presents a choice between
- a first operating mode (50) in which the auxiliary brake is prioritized,
- a second operating mode (51) in which the auxiliary brake is prioritized and the service brake is used on individual wheel axles in the event that the service brake is used despite the prioritization of the auxiliary brake, this being done where the requested brake force exceeds a first limit, and
- a third operating mode (52) in which the service brake is prioritized.